



epoch systems

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Dear John,

Chapter 16 of the SCSI 2 specification has greatly helped in achieving almost plug and play compatibility among medium-changer device manufacturers. I'd like to describe three additional command set features which would make these devices even more interchangeable.

1) There are two medium import models available with library units today.

- **Command Driven Insertion** - a move medium with the source address being the import element address must be issued to allow the import element to be accessible by the user.

- **Status Driven Insertion** - the import element is normally accessible to the user for inserting cartridges. Software must periodically poll the state of the import element to detect the presence of media. `READ_ELEMENT_STATUS` should always reflect the state of the import element.

If a bit could be defined (`C/S'_Import`) in the Mode Sense Device Capabilities page (`IF`) to indicate the type of import model used by a device, the driver could read the bit and operate either import model.

2) There are two models for handling medium ejection from a data transfer element.

- the `MOVE_MEDIUM` from a data transfer element to any other location embeds a medium `EJECT` operation as part of its execution

- a `LOAD/UNLOAD` with `EJECT` must be issued to the data transfer element `SCSI_ID` prior to performing a `MOVE_MEDIUM` command (to the changer `SCSI_ID`) from the data transfer element to any other location.

In the Mode Sense Device Capabilities (`IF`) page, a bit could be defined that identifies whether or not a `MOVE_MEDIUM` from a data transfer element to any other location in the changer embeds an eject command within the `MOVE_MEDIUM` command execution. The bit, `MMEJ` would be set to '1' if the `MOVE_MEDIUM` includes an eject operation.

3) A few new changers have more than one way for getting media into the unit. There may be a front door, providing accessibility to all cartridges in the unit as well as a single-medium import element. When either import element was accessed, a check condition with Sense Key/ASC=6/28 is returned. My proposal is to add a definition for an Additional Sense Code Qualifier that identifies which import element has been accessed. The actions taken by software for these two import element types is very different and therefore requires an identification of which import element was accessed. In the case where the single medium import element was accessed, the software need only examine that one medium. When being notified of an access to potentially all of the media in the changer, an entire inventory must be performed.

Since a single-medium slot is the most-popular model for import element design, I offer the following bit definitions for ASCQ:

<u>Import/Export Element Type</u>	<u>ASCQ</u>
Single Medium -	00
All Media	01

There may be devices which do not have a single medium import element and only have accessibility to all media, such as the Exabyte EXB-10i 8mm tape changer product. In this case ASCQ should be set to 1 for conformity.

Please, feel free to contact me at (508)-836-4711 (x311) if you have any questions about these requests. My address is:

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Best Regards,

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